IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Stephen James FIELD

Serial No. : Art Unit:

Filed: : Examiner:

For: VALVES : Atty Docket: 0119/0027

SUBMISSION OF PRIORITY DOCUMENTS

Assistant Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto please find a certified copy of applicant's United Kingdom application No. 0225075.1 filed October 29, 2002.

Applicant requests the benefit of said October 29, 2002 filing date for priority purposes pursuant to the provisions of 35 USC 119.

Respectfully submitted,

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Phone: (703) 299-4090

Date: Oct 8 2003

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Signed AwBrewer.

Dated 29 July 2003

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P01/7700 0.00-0225075.1

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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

1. Your reference	0200380
2. Patent application number *(The Patent Office will fill in this part)*	0225075.1 29 OCT 2002
3. Full name, address and postcode of the or of each applicant *(underline all surnames)*	SMITHS GROUP PLC 765 FINCHLEY ROAD LONDON NW11 8DS
Patents ADP number *(if you know it)*	8032310001 08461352001
If the applicant is a corporate body, give the country/state of its incorporation	GB
4. Title of the invention	VALVES
5. Name of your agent *(if you have one)*	J. M. FLINT
"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*	765 FINCHLEY ROAD LONDON NW11 8DS
Patents ADP number *(if you know it)*	1063304001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*
a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

YES

VALVES

This invention relates to valves.

Closed system suction catheter assemblies are used for removing secretions from within the trachea or bronchii of an intubated patient. The assembly comprises a flexible catheter connected at its machine end with a coupling including a valve that can be opened or closed to control the application of suction to the catheter. The valve is usually of a kind having a valve member movable laterally of a flow path between two positions where flow is either enabled or prevented.

Towards its patient end, the catheter extends through a forward coupling connected between the end of a tracheal tube and a ventilation circuit. The catheter can be advanced through the forward coupling down the tracheal tube to enable suctioning. A flexible envelope extends between the two couplings, enclosing the catheter so that it can be manipulated through the envelope. A wiper seal in the forward coupling prevents gas from the ventilation system inflating the envelope. Assemblies of this kind are sold by Portex, Inc under the trade mark Steri-Cath, by Ballard Medical, Inc/Kimberly-Clark under the trade mark Trach-Care and by Sorenson Critical Care, Inc. In some assemblies, provision is made for cleaning the catheter after its patient end has been withdrawn into the forward coupling. A manually-operable valve is located forwardly of the wiper seal providing a cleaning chamber between the valve and the wiper seal. An irrigation port opens into this chamber so that saline can be supplied to it, which is then drawn along the bore of the catheter by the applied suction to remove matter collected within the bore.

opening and a second position in which pressure applied to the tubular member is sufficient to open the opening.

The external means is preferably a collar embracing the tubular member and it is preferably displaceable by sliding along the length of the passage.

According to another aspect of the present invention there is provided a valve including a deformable tubular member having a fluid passage extending therethrough, an internal seal of a deformable material defining a slit extending transversely of the fluid passage, the seal including a substantially rigid reinforcement member extending parallel to the slit on opposite sides such that when a force is applied externally along the slit the reinforcement member is bowed outwardly to open the slit.

According to a third aspect of the present invention there is provided a closed system suction catheter assembly including a valve according to the above one or other aspect of the present invention.

The valve may be mounted towards the patient end of the assembly, the valve being openable to enable extension of a suction catheter and being closable to isolate the catheter and enable cleaning of the catheter. Alternatively, or additionally, the valve may be mounted towards the machine end of the assembly and be operable to control suction applied to the catheter.

suction catheter 10 is fixed at a machine end fitting 20, which includes a suction control valve 21 and a spigot 22 to which flexible tubing 23 is connected extending to a suction source (not shown). The valve 21 has a normally closed state, where no suction is applied to the catheter 10, but can be actuated manually to open it and apply suction from the tubing 23 to the catheter. A flexible envelope 24 encloses the catheter 10 where it extends between the two fittings 1 and 20, the envelope being joined to the fittings at opposite ends.

With reference now also to Figures 2 and 3, the valve 5 includes a single, one-piece moulding 50 of a resilient elastomeric material having a tubular sleeve 51. The sleeve 51 extends coaxially within an outer rigid, tubular housing 52, which traps the forward end of the sleeve on the outside of the patient fitting 1. The housing 52 also traps the rear end of the sleeve 51 on the forward end of a tubular fitting 40 forming a part of the cleaning chamber 4. Midway along its length, the moulding 50 has two pads 53 diametrically opposite one another on the outer surface, the pads being square in shape and having an inclined surface 54 that increases in height in the forward direction. The two pads 53 project outwardly through two openings 55 in the housing 52. Internally, the moulding 50 has an integral, transverse web 56 extending across the diameter of the sleeve 51. The web 56 has a slit 57 through it extending diametrically across passage 58 through the sleeve 51 between the two pads 53. In its natural state, the slit 57 is closed (as shown in Figure 2), preventing substantial fluid flow along the passage 58. The slit 57, however, can be opened (as shown in Figure 3) by squeezing the sleeve 51 along the length of the slit, that is, by squeezing the two pads 53 together.

The valve 5 is completed by a locking collar 60 of circular section mounted on the outside of the housing 52 to the rear of the openings 55 and the pads 53. The collar 60 can be

With reference now to Figures 4 and 5, there is shown an alternative form of valve 105. This has a moulding 150 similar to that of the valve 5 but differs in that the web 156 includes two semi-rigid elongate strips 170 bonded with it and extending along opposite sides of the slit 157. The two strips 170 are joined at opposite ends by respective living hinges 171. The nature of the strips 170 is such that, when the pads 153 are squeezed together along the length of the slit 157, the strips bow outwardly away from one another and hold the slit open. This arrangement provides a more positive open or closed feel to the valve and ensures that, when the valve is open, the size of the opening is always sufficient to allow free, unimpeded movement of the catheter through the opening. This form of valve could be actuated directly between the finger and thumb of the user, or it could be opened by a collar or similar external member that would maintain the valve open without the need for manual pressure.

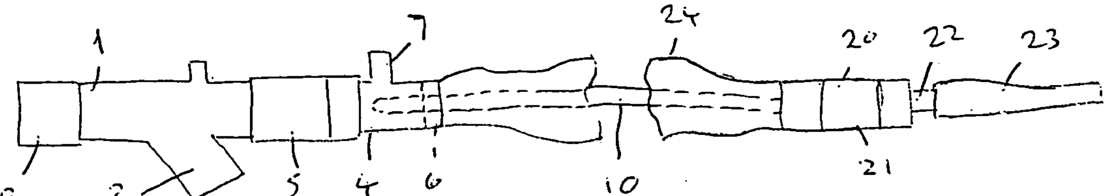

FIG. 1

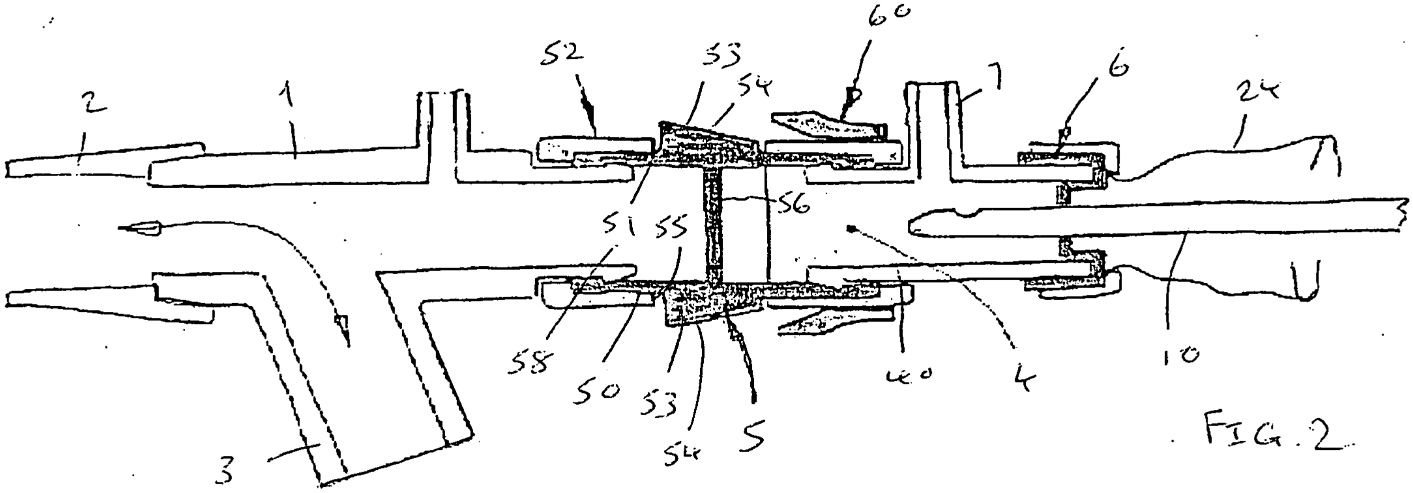

FIG. 2

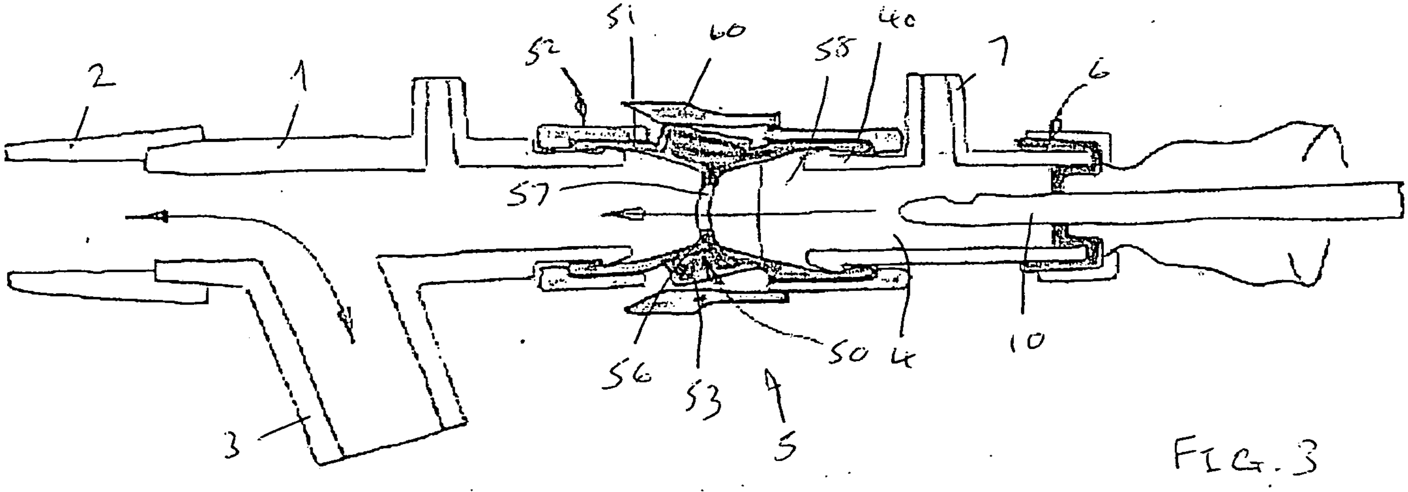

FIG. 3

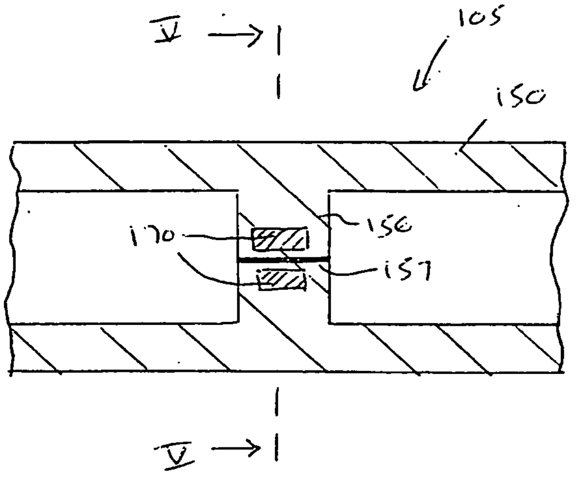

FIG. 4

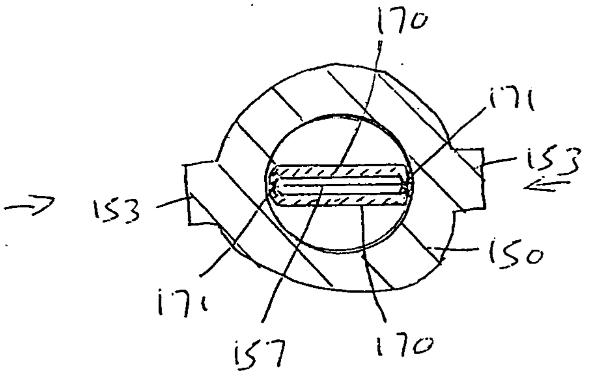

FIG. 5